

Executive Summary

Basinwide water quality planning is a watershed-based approach to restoring and protecting the quality of North Carolina's surface waters. Basinwide water quality plans are prepared by the NC Division of Water Quality (DWQ) for each of the 17 major river basins in the state. Each basinwide plan is revised at five-year intervals. While these plans are prepared by DWQ, their implementation and the protection of water quality entail the coordinated efforts of many agencies, local governments and stakeholders throughout the state.

The goals of basinwide planning are to:

- Identify water quality problems and restore full use to Impaired waters.
- Identify and protect high value resource waters.
- Protect unimpaired waters while allowing for reasonable economic growth.

DWQ accomplishes these goals through the following objectives:

- Collaborate with other agencies to develop appropriate management strategies.
- Assure equitable distribution of waste assimilative capacity.
- Evaluate cumulative effects of pollution.
- Improve public awareness and involvement.
- Regulate point and nonpoint sources of pollution where other approaches are not successful.

This 2005 document is the third five-year update of the *French Broad River Basinwide Water Quality Plan*. The first basinwide plan for the French Broad River basin was completed in 1995 and the second in 2000. The format of this plan was revised in response to comments received during the first and second planning cycles. DWQ replaced much of the general information in the first two plans with more detailed information specific to the French Broad River basin. For this plan, a greater emphasis was placed on identifying water quality concerns on the watershed level in order to facilitate protection and restoration efforts.

DWQ considered comments from four public workshops held in the basin and subsequent discussions with local resource agency staff and citizens during draft plan development. This input will help guide continuing water quality management activities throughout the river basin over the next five years.

French Broad River Basin Overview

The French Broad River basin drains to the Gulf of Mexico via the Ohio, Tennessee and Mississippi Rivers (Figure 1). The boundaries of the French Broad River basin within North Carolina contain portions or all of Avery, Buncombe, Haywood, Henderson, Madison, Mitchell, Transylvania and Yancey counties (Figure 2). DWQ subdivides all river basins into subbasins. The French Broad River basin contains seven subbasins (Figure 2). Maps of each subbasin are included in each of the subbasin chapters (Chapters 1 through 7).

The basin is composed of three major drainage areas. These include the French Broad River watershed, the Pigeon River watershed and the Nolichucky watershed. All three rivers individually flow northwest into Tennessee.

There are seven man-made lakes in the basin monitored by DWQ and include: Lake Julian; Burnett Reservoir; Beetree Reservoir; Lake Kenilworth; Lake Junaluska; Allen Creek Reservoir; and Waterville (Walters) Lake.

Major tributaries in the basin include: the East, North and West Fork French Broad Rivers; Mills River; the Mud Creek watershed; Swannanoa River; East and West Fork Pigeon Rivers; and the North and South Toe Rivers. There are several trout waters, High Quality Waters (HQW), and Outstanding Resource Waters (ORW) found throughout the basin.

Information presented in this basinwide water quality plan is based on data collected from September 1997 to August 2002 and does not include damage and/or impacts from the recent flood and hurricane events of September 2004. Samples were collected during November and December 2004 in order to evaluate the impacts from the hurricanes and will be discussed in the next basinwide cycle.

The varied nature of the topics discussed below demonstrates the wide range of stressors leading to water quality degradation in the French Broad River basin. Water quality stressors are identified when impacts have been noted to biological (fish and benthic) communities or water quality standards have been violated. Water quality decline can often be attributed to a combination of many stressors that lead to habitat and water quality degradation. In some way, every person, industry, farm and municipality in the basin impacts water quality. Therefore, every resident of the basin should play a role in management strategies designed to protect and restore the streams, lakes and rivers in the basin.

Population Growth and Urbanization

The French Broad River basin encompasses all or portions of eight counties and 24 municipalities. In 2000, the overall population of the basin (based on the percent of the county land area in the basin) was 393,795, with approximately 139 persons/square mile. The most populated areas are located in and around Asheville, Hendersonville, Waynesville and Black Mountain.

French Broad River Basin Statistics

Total Area: 2,830 sq. miles
Freshwater Stream Miles: 3,985.2 mi
Freshwater Lakes Acres: 1,736.6 ac
No. of Counties: 8
No. of Municipalities: 24
No. of Subbasins: 7
Population (1990): 357,932*
Population (2000): 393,795*
Pop. Density (2000): 139*

* Estimated based on % of county land area that is partially or entirely within the basin, not the entire county population.

Populations of counties that are wholly or partially contained within the basin increased by over 70,000 people between 1990 and 2000. Buncombe, Haywood, Madison and Henderson counties contain the fastest growing municipalities in the basin. County populations are expected to grow by more than 122,000 (25 percent) by 2020 for a total population of almost 575,000 people.

Growing populations are often accompanied by a loss of natural areas and an increase in imperious

surface. Based on the current land cover information provided by the National Resources Inventory (USDA-NRCS, June 2001), there was a 38 percent decrease (23,500 acres) in cultivated cropland in the French Broad River basin from 1982 to 1997. Uncultivated cropland and pastureland decreased by a total of 33,700 acres (45.5 and 7.7 percent, respectively). Forest cover also decreased by nearly 60,000 acres (6 percent). Urban and built-up land cover increased significantly by 90,000 acres (85.2 percent). Much of the land cover change is accounted for in the Upper French Broad River hydrologic unit, which includes rapidly growing areas in Buncombe and Henderson counties. Population growth trends and the accompanying impacts to water quality are discussed in Chapters 9 and 10.

Impacts from Stormwater Runoff

Stormwater runoff is a primary carrier of nonpoint source pollution (NPS) in both urbanized and rural areas. The impact of stormwater runoff is particularly severe in developing areas where recently graded areas are highly susceptible to erosion, and urbanized areas where stormwater runoff is rapidly channeled through curb and gutter systems into nearby streams.

There are several different stormwater programs administered by DWQ. One or more of these programs affect several communities in the French Broad River basin. The goal of DWQ stormwater discharge permitting regulations and programs is to prevent pollution from entering the waters of the state via stormwater runoff. Those programs try to accomplish this goal by controlling the source(s) of pollution. These programs include the NPDES Phase II designations, HQW/ORW stormwater requirements and the Water Supply Watershed Program. Local governments that are or may be affected by these programs are presented in Chapter 13.

Local Involvement

Local organizations and agencies are able to combine professional expertise and local knowledge not present at the state and federal level. This allows groups to holistically understand the challenges and opportunities of local water quality concerns. Involving a wide array of people in water quality projects also brings together a range of knowledge and interests and encourages others to become involved and invested in these projects. Working in cooperation across jurisdictional boundaries and agency lines opens the door to additional funding opportunities and eases the difficulty of generating matching or leveraged funds. This could potentially allow local entities to do more work and be involved in more activities because funding sources are diversified. The most important aspect of these local endeavors is that the more localized the project, the better the chances for success.

The collaboration of local efforts is key to water quality improvements, and DWQ applauds the foresight and proactive response by locally based organizations and agencies to potential water quality problems. There are many excellent examples of local agencies and groups using these cooperative strategies throughout the state. Several local watershed projects are highlighted throughout the subbasin chapters (Chapters 1-7). Chapter 16 also examines the local and federal initiatives underway in the French Broad River basin.

Surface Water Classifications and Use Support Assessments

Use support assessments based on surface water classifications form the foundation of this basinwide plan. Surface waters are classified according to their best-intended use. Determining

how well a waterbody supports its uses (*use support* rating) is an important method of interpreting water quality data and assessing water quality.

Use support methodology has changed significantly since the 2000 revision of the *French Broad River Basinwide Water Quality Plan*. In the previous plan, surface waters were rated fully supporting (FS), partially supporting (PS), not supporting (NS) and not rated (NR). FS was used to identify waters that were meeting their designated uses. Impaired waters were rated PS and NS, depending on the degree of degradation. NR was used to identify waters with no data or having inconclusive data. The *2002 Integrated Water Quality Monitoring and Assessment Report Guidance* issued by the U.S. Environmental Protection Agency (EPA) requested that states no longer subdivide the Impaired category. In agreement with this guidance, North Carolina no longer subdivides the Impaired category and rates waters as Supporting, Impaired, Not Rated or No Data. These ratings refer to whether the classified uses of the water (such as water supply, aquatic life and primary/ secondary recreation) are being met.

Use support methods have been developed to assess ecosystem health and human health risk through the development of use support ratings for five categories: aquatic life, fish consumption, recreation, shellfish harvesting and water supply. These categories are tied to the uses associated with the primary classifications applied to NC rivers, streams and lakes. A full description of the classifications is available in the DWQ document titled: *Classifications and Water Quality Standards Applicable to Surface Waters of North Carolina*. This document is available on-line at <http://h2o.enr.state.nc.us/csu/>.

Biological, chemical and physical monitoring data collected between September 1997 and August 2002 were used to assign use support ratings in this basin. The list of Impaired waters is presented in Table 1 and total monitored miles and acreage are presented below. Detailed information related to use support methodology is provided in Appendix X.

Aquatic Life

The aquatic life use support category is applied to all waters in North Carolina. Therefore, this category is applied to all 3,985.9 freshwater miles and 1,736.6 freshwater acres in the French Broad River basin. Approximately 24.4 percent of the stream miles (973.2 miles) and 56.7 percent of the freshwater acres (985.1 acres) were monitored. There were 129.2 (13.2%) Impaired stream miles and 200.0 (20.3%) Impaired freshwater acres.

Fish Consumption

Like the aquatic life use support category, the fish consumption category is also applied to all waters in the state. Fish consumption use support ratings are based on fish consumption advice or specific advisories issued by the NC Department of Health and Human Services (NCDHHS). If a limited fish consumption advice, advisory or a no consumption advisory is posted at the time of use support assessment, the water is rated Impaired.

Blue Ridge Paper Products, Inc. (BRPP) and Carolina Power and Light Company (CP&L) are required to annually monitor dioxin levels in fish tissue in the Pigeon River. This monitoring is required as part of the BRPP discharge permit issued by DWQ and as a condition of the Federal Energy Regulatory Commission (FERC) license for CP&L. *In the past*, there has been a limited-consumption advisory for common carp in effect for the Pigeon River from the Town of Canton to the North Carolina-Tennessee state line (approximately 26 miles, including Waterville Lake).

In 2001, however, the fish consumption advisory was revised by the NCDHHS due to declining dioxin concentrations in fish. The advisory was removed from common carp caught in the river. The limited-consumption advisory remains in effect, however, for Waterville (Walters) Lake. NCDHHS suggests that women of childbearing age and children under the age of 15 avoid eating carp caught from the lake. For all others, consumption of carp should be limited to no more than one meal per month. Swimming, boating and other recreational activities are not affected by this advisory. Visit the NCDHHS website for more information at www.epi.state.nc.us/epi/fish.

Recreation

The recreation category is also applied to all waters in the state. Approximately 8.4 percent of the freshwater stream miles (333.4 miles) were monitored for recreation; however, no freshwater acres were sampled during the assessment period. There were 22.0 stream miles (6.6 percent) Impaired in the recreation use support category.

Water Supply

Based on reports from the NC Department of Environmental Health (DEH) regional water treatment consultants, all water supply waters in the French Broad River basin are Supporting on an evaluated basis.

Impaired Waters

Impaired waters found in the French Broad River basin identified by DWQ within the last five years are presented in Table 1. The use support category for which a waterbody is Impaired is indicated in the table. Descriptions of Impaired segments, as well as problem parameters, are outlined in Appendix X. Management strategies for each waterbody are discussed in detail in the appropriate subbasin chapter. Maps showing current use support ratings for waters in the French Broad River basin are also presented in each subbasin chapter (Chapters 1 through 7).

Table 1 Impaired Waters Monitored in the French Broad River Basin (1997 to 2002)

Stream/ River Name *	Assessment Unit Number (AU#)	Subbasin	Class	Miles	Acres	Category
West Fork French Broad River	6-2-(0.5)b	04-03-01	B Tr	0.6	0.0	Aquatic Life
Peter Weaver Creek	6-10b	04-03-01	C Tr	0.8	0.0	Aquatic Life
Morgan Mill Creek	6-10-1b	04-03-01	B Tr	0.1	0.0	Aquatic Life
Mud Creek	6-55b	04-03-02	C	1.9	0.0	Aquatic Life
Mud Creek	6-55c	04-03-02	C	11.0	0.0	Aquatic Life
Mud Creek	6-55d	04-03-02	C	2.2	0.0	Aquatic Life
Bat Fork	6-55-8-1a	04-03-02	C	4.8	0.0	Aquatic Life
Bat Fork	6-55-8-1b	04-03-02	C	1.5	0.0	Aquatic Life
Devils Fork	6-55-8-2b	04-03-02	C	2.7	0.0	Aquatic Life
Clear Creek	6-55-11-(1)a	04-03-02	B Tr	2.7	0.0	Aquatic Life
Clear Creek	6-55-11-(1)c	04-03-02	B Tr	2.1	0.0	Aquatic Life
Clear Creek	6-55-11-(5)	04-03-02	C	6.5	0.0	Aquatic Life

Hominy Creek	6-76d	04-03-02	C	7.8	0.0	Aquatic Life
French Broad River	6-(54.5)b	04-03-02	B	8.2	0.0	Recreation
French Broad River	6-(54.5)d	04-03-02	B	6.4	0.0	Aquatic Life
French Broad River	6-(54.5)e	04-03-02	B	3.9	0.0	Aquatic Life
Swannanoa River	6-78a	04-03-02	C	7.0	0.0	Aquatic Life
Swannanoa River	6-78c	04-03-02	C	2.6	0.0	Aquatic Life
Newfound Creek	6-84a	04-03-02	C	3.9	0.0	Aquatic Life
Newfound Creek	6-84b	04-03-02	C	1.3	0.0	Aquatic Life
Newfound Creek	6-84c	04-03-02	C	2.3	0.0	Aquatic Life
Newfound Creek	6-84d	04-03-02	C	4.4	0.0	Aquatic Life
Ross Creek	6-78-23b	04-03-02	B	1.1	0.0	Aquatic Life
Cane Creek	6-57-(9)a	04-03-02	C	9.6	0.0	Aquatic Life
Gash Creek	6-47	04-03-02	C	3.7	0.0	Aquatic Life
Mill Pond Creek	6-51	04-03-02	WS-IV	3.1	0.0	Aquatic Life
Brandy Branch	6-54-6	04-03-03	WS-III	2.1	0.0	Aquatic Life
Little Ivy Creek (River)	6-96-10a	04-03-04	WS-II HQW	2.6	0.0	Aquatic Life
Pigeon River	5-(7)b	04-03-05	C	6.4	0.0	Aquatic Life
Waterville (Walters) Lake	5-(7)e	04-03-05	C	0.0	773.1	Fish Consumption
Richland Creek	5-16-(1)a	04-03-05	B	8.0	0.0	Recreation
Richland Creek	5-16-(1)b	04-03-05	B	2.3	0.0	Aquatic Life, Recreation
Richland Creek	5-16-(1)c	04-03-05	B	0.7	0.0	Aquatic Life, Recreation
Richland Creek	5-16-(1)d	04-03-05	B	0.9	0.0	Recreation
Richland Creek	5-16-(1)e	04-03-05	B	2.0	0.0	Aquatic Life, Recreation
Lake Junaluska (Richland Creek)	5-16-(1)f	04-03-05	B	0.0	200.0	Aquatic Life
Richland Creek	5-16-(16)a	04-03-05	B	1.6	0.0	Aquatic Life
Fines Creek	5-32	04-03-05	C	9.7	0.0	Aquatic Life
Raccoon Creek	5-16-14	04-03-05	B	4.7	0.0	Aquatic Life
Hyatt Creek	5-16-6a	04-03-05	C	0.9	0.0	Aquatic Life
Hyatt Creek	5-16-6b	04-03-05	C	2.6	0.0	Aquatic Life
Jacks Creek	7-2-63	04-03-06	C	8.5	0.0	Aquatic Life
North Toe River	7-2-(27.7)b	04-03-06	C Tr	11.3	0.0	Aquatic Life
Cane River	7-3-(13.7)b	04-03-07	C Tr	3.5	0.0	Aquatic Life

Use Support Category	Units	Total Impaired Length/Area	Percent of All Waters
Aquatic Life	Freshwater miles	129.2 mi	13.2
Fish Consumption	Freshwater acres	773.1 ac	20.3
Recreation	Freshwater miles	22.0 mi	6.6

* Refer to individual subbasin chapters for a description of the Impaired segments.

Recommended Management Strategies for Restoring Impaired Waters

The Impaired stream segments within the French Broad River basin are impacted by a combination several stressors, most of which are associated with nonpoint source pollution. Within this basinwide plan, DWQ presents management strategies and recommendations for those waters considered to be Impaired or that exhibit some notable water quality problems. Major water quality problems in the basin include habitat degradation and fecal coliform bacteria contamination (affecting primary recreation). Habitat degradation (including sedimentation, streambed scour and streambank erosion) is primarily attributed to nonpoint source pollution. Sources of nonpoint source pollution include runoff from construction sites, agricultural lands, urban areas and hydromodification.

The task of quantifying nonpoint sources of pollution and developing management strategies for these Impaired waters is very resource intensive. This task is overwhelming, given the current limited resources of DWQ, other agencies (e.g., Division of Land Resources, Division of Soil and Water Conservation, NC Cooperative Extension Service, etc.) and local governments. DWQ will collaborate with other agencies and watershed groups that deal with nonpoint source pollution issues to develop management strategies for the Impaired and notable waters within the French Broad River basin.

Impaired Waters on the State's 303(d) List

For the next several years, addressing water quality impairment in waters that are on the state's 303(d) list will be a DWQ priority. Section 303(d) of the federal Clean Water Act requires states to develop a list of waters not meeting water quality standards or which have Impaired uses. The waters in the French Broad River basin that are on this list are discussed in the individual subbasin chapters (Chapters 1 through 7). States are also required to develop Total Maximum Daily Loads (TMDLs) or management strategies for 303(d) listed waters to address impairment. EPA issued guidance in August 1997 that called for states to develop schedules for developing TMDLs for all waters on the 303(d) list within 8-13 years. Information regarding 303(d) listing and reporting methodology can be found in Appendix VII.

Challenges Related to Achieving Water Quality Improvements

To achieve the goal of restoring Impaired waters throughout the basin, DWQ will need to work more closely with other state agencies and stakeholders to identify and control pollutants. The costs of restoration will be high, but several programs exist to provide funding for restoration efforts. These programs include the Clean Water Management Trust Fund (CWMTF), the NC

Agriculture Cost Share Program (NCACSP), the NC Ecosystem Enhancement Program (EEP), and the Section 319 of the EPA.

Balancing economic growth and water quality protection will be a tremendous challenge. Point source impacts on surface waters can be measured and addressed through the basinwide planning process. Nonpoint sources of pollution can be identified through the basinwide plan, but actions to address these impacts must be taken at the local level. Such actions should include: development and enforcement of local erosion control ordinances; requirement of stormwater best management practices (BMPs) for existing and new development; development and enforcement of buffer ordinances; and land use planning that assesses impacts on natural resources. This basinwide plan presents many water quality initiatives and accomplishments that are underway within the basin. These actions provide a foundation on which future initiatives can be built.

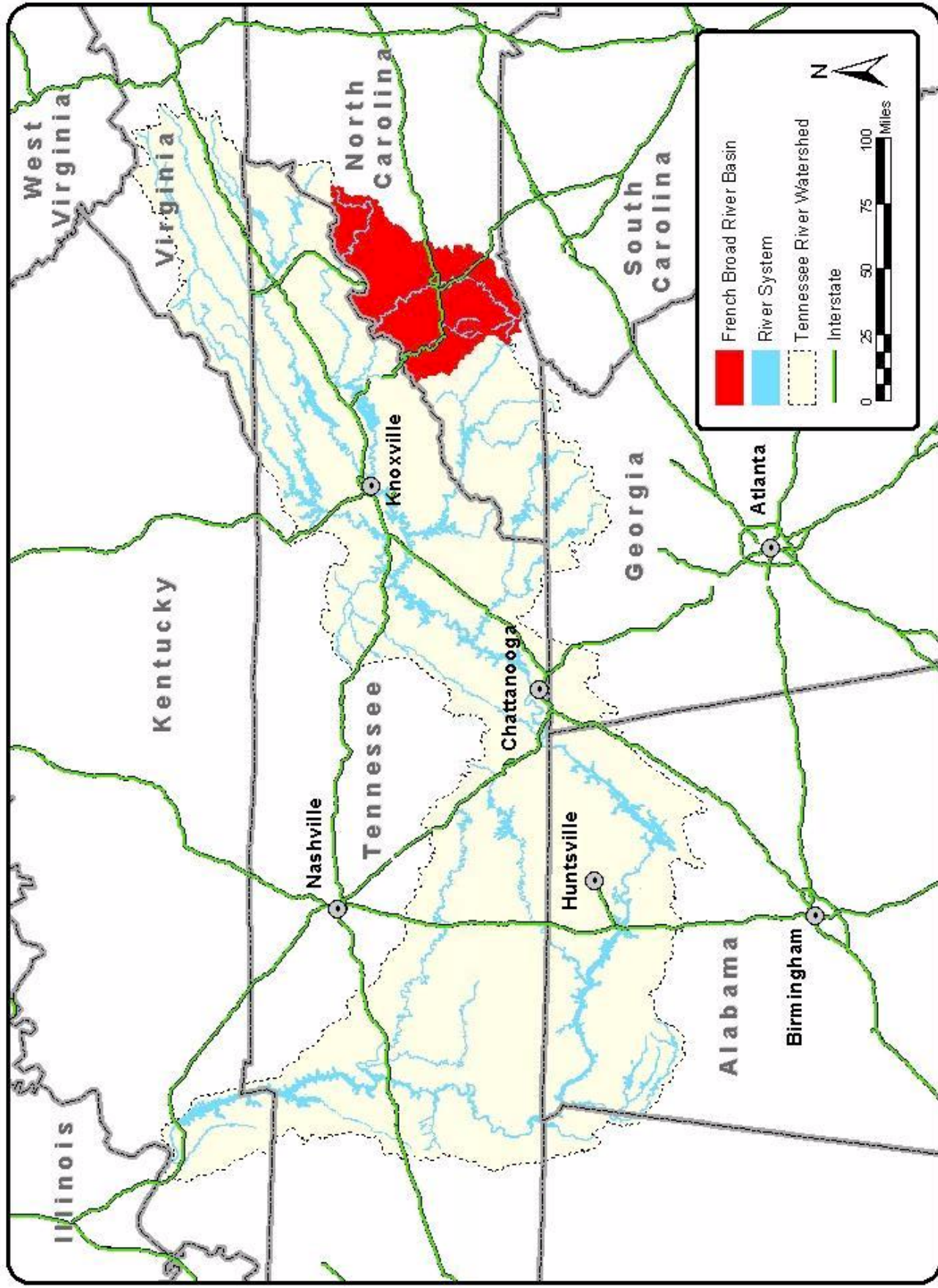


Figure 1 General Map of the Entire French Broad River Basin

Figure 2 General Map of the French Broad River Basin

